REMARKS

Claims 1, 16, 17, 18, 19 and 31 have been amended.

Applicant's representative wishes to thank the Examiner for the courtesies extended during the interview on May 4, 2004, in which a discussion regarding the use of the terms "target departure volume" and "estimate of arrival volume" was conducted, and in which the relevance of the cited art was discussed. The substance of that discussion is presented formally in this response.

Claim 33 was rejected under 35 USC 112, second paragraph as being indefinite due to lack of antecedent basis for the term "...the plurality of transmitters..." Claim 33 has been amended to provide the necessary antecedent basis and it is respectfully submitted the rejection under 35 USC 112 is overcome.

In the Final Office Action the Examiner maintained the rejection of claims 1-8 and 15-24 as being unpatentable over Ruutu in view of Kolarov.

Applicant's amended claim 1 has been amended to recite:

1.   A method of adjusting the volume of data communicated between a transmitter and a receiver on a network in a time interval, the method comprising:

a)   producing a desired volume value In response to a receiver volume value specified by the receiver and a difference between a target departure volume and an estimate of arrival volume of data at a queue through which data passes from the transmitter to the receiver, wherein said target departure volume is a desired departure volume; and

b)   communicating said desired volume value to the transmitter in response to an acknowledgement signal produced by the receiver.

The Examiner and the applicant' appear to agree that Ruutu fails to disclose that the volume value is generated based on a difference between a target departure volume and an estimate of arrival volume of data at a queue through which data passes from the transmitter to the receiver. The Examiner and applicant disagreed in connection with the extent of the disclosure of Kolarov, although the Examiner appears to better appreciate applicant's arguments in light of the telephone discussion mentioned above and it is hoped that when the Examiner sees these arguments in writing, there will be sufficient appreciation of the arguments to permit the case to be allowed.

To reiterate the remarks made in the telephone discussion, and to rebut the Examiner's "Response to Arguments", set forth in the Final Action, Applicant respectfully submits that the Kolarov reference describes a method of rate-based feedback congestion control at an ATM switch for ABR service in an ABR network. At col 3, lines 61-62 Kolarov states: "The control uses only one primary measure, namely the <u>queue length</u>, to exercise control."

Applicant's independent claims 1, 16, 17, 18, 19, recite, in various forms, producing a desired volume value in response to:

1)   a receiver volume value specified by the receiver; and
2)   a difference between a) a target departure volume value and b) an estimate of arrival volume of data at a queue....

At Col. 6, lines 30-33 Kolarov states: "At each switch within the network, the explicit rate is computed <u>based on the global queue fill</u> of the associated output port, via a second order controller, following a Proportional-plus-Derivative (PD) Control Law." Figure 4 of Kolarov and the related description in Col. 6 at lines 36-57 describe the various entities used to calculate the explicit rate and these include the previous explicit rate, the available ABR capacity, the queue fill time and a queue fill reference value, none of which correspond to either of the two entities claimed by the applicant.

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In particular, Kolarov fails to disclose the use of a receiver volume value specified by the receiver in the control of the explicit rate and only relies on queue length to determine an explicit rate. There is no disclosure or suggestion that the control law should include consideration of a receiver volume value specified by the receiver or any disclosure or suggestion that a receiver volume value specified by the receiver should be considered in calculating the explicit rate.

Column 7, lines 25-37 of Kolarov describe the control law in more detail with the statement: "Note that this equation only uses past values of queue length and computed rates and does not require any measure of incoming rate, available capacity, number of users, and the like". Note that applicant's claim recites the use of an estimate of arrival volume of data at the queue. The Kolarov system specifically sought to exclude the use of this entity.

The Examiner has referred to Col 13, lines 17-27 of Kolarov which state: "When congestion arises, either because the number of active sources have increased or the aggregate input rate has increased or the available capacity decreases, the global queue begins to grow. Congestion is detected by monitoring the global queue size and the rate of growth of queue. The rate of growth of queue is based on the excess rate Rex which is the same as the difference between the rate at which ABR traffic is arriving and the rate at which ABR traffic is being served." The Examiner has equated the terms "rate at which ABR traffic is being served" and "rate at which ABR traffic is arriving" with target departure volume and estimate of arrival volume. The amendments to applicant's independent claims serve to clarify that the target departure volume is a desired volume of data that can be transmitted in a time interval, not the actual amount of data or the rate at which data is being served, as the Examiner has suggested. It is respectfully submitted that this would be clear to one of ordinary skill in the art having due regard to the term "target". The estimate of arrival volume recited in applicant's claim is not the actual arrival volume, but an estimate thereof, as also would be clear to one of

ordinary skill in the art having due regard to the term "estimate". Thus, the passage relied on by the Examiner is not suggestive of the terms used in applicant's claims.

At Col 13, lines 32-34, Kolarov states, "The detection of congestion and the subsequent action taken depends on the state of the queue and the value of the excess rate." In the remainder of column 13 and columns 14 and 15 and column 16 to line 50, various actions are described, some of which involve adjustments to the excess rate produced as described in connection with Figure 4, but none of which involve 1) a receiver volume value specified by the receiver; and 2) a difference between a) a target departure volume value and b) an estimate of arrival volume of data at a queue...., as recited in applicant's claims.

In view of the above remarks and the claim amendments herewith, applicant respectfully submits the references proposed by the Examiner fail to disclose or suggest all of the limitations of the independent claims. In addition there is no motivation to combine the references with any expectation of success that the result would be the invention claimed by the applicant. Consequently applicant respectfully submits the independent claims are not obvious and the rejection under 35 USC 103(a) has been overcome.

Claims 2-8 and 15 ultimately depend from amended claim 1. The rejection as it pertains to these claims is overcome by their dependence upon amended claim 1 and due to the additional subject matter they claim.

Claims 20-24 depend from amended claim 19. The rejection as it pertains to these claims is overcome by their dependence upon amended claim 1 and due to the additional subject matter they claim.

In the Final Action, the Examiner maintains the rejection of claims 9, 10, 25 and 26 under 35 USC 103(a) as being unpatentable over Ruutu in view of

Kolarov and further in view of the article "Random Early Detection Gateways for Congestion Avoidance" by Floyd et al, hereafter referred to a Floyd.

Claims 9 and 10 are ultimately dependent upon claim 1 and claims 25 and 26 are ultimately dependent upon claim 19. From the remarks above Ruutu and Kolarov have been shown to fail to disclose or suggest producing a desired volume value in response to:

1)   a receiver volume value specified by the receiver; and
2)   a difference between a) a target departure volume value and b) an estimate of arrival volume of data at a queue....

Claim 9 recites "time filtering successive arrival volume values" and claim 10 recites that time filtering involves "time filtering successive arrival volume values".

The Examiner states that Section 6 and 11 of Floyd disclose "a system wherein the average length (fullness) of a queue is determined by inspecting the number of packets arriving [packets](arrival volume values) [of] at the buffer over a time period (time filtered) and that it would have been obvious to implement this method of Floyd in the system of Ruutu because doing so would allow the FIC of Ruutu to detect the fullness levels of its buffers and thus a congestion condition when its queue is over-filled.

Floyd describes random early detection gateways and more specifically packet marking by setting a congestion indication bit in the packet header. Nowhere does Floyd disclose or suggest any application of any of the concepts described therein to adjust the volume of data communicated between a transmitter and a receiver by producing a desired volume value as claimed in claims 9, 10, 25 and 26. The aspects of the method of Floyd that are disclosed in sections 6 and 12, relate to calculating average queue length. There is no disclosure or suggestion to time filter successive arrival volume values or to produce a weighted sum of past and present arrival volume

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values, as claimed. The queue is the collection of packets that have been received, not the arrival volume. To address the Examiner's response to arguments, the arrival volume and queue size may be related in that the arrival volume may reflect a change in queue size, but Floyd provides no explicit directions or suggestion to consider arrival volume instead of queue size in a system or method for adjusting the volume of data communicated between a transmitter and a receiver. Thus, the queue length cannot be equated to the arrival volume as the Examiner has proposed and there is nothing to suggest that it should be equated. Consequently there is nothing in Floyd to suggest the subject matter claimed in claims 9, 10, 25 and 26 and therefore the rejection of these claims is improper and is even more so in light f the amendments to the base claims from which these claims depend.

The Examiner maintains the rejection of claims 11 and 27 under 35 USC 103(a) as being unpatentable over Ruutu in view of Kolarov and further in view of Fan et al, hereafter referred to as Fan.

Claims 11 and 27 are ultimately dependent upon claims 1 and 19 respectively. From the remarks above Ruutu and Kolarov have been shown to fail to disclose or suggest producing a desired volume value in response to:

1)   a receiver volume value specified by the receiver; and
2)   a difference between a) a target departure volume value and b) an estimate of arrival volume of data at a queue....

Claims 11 and 27 recite generating an estimated target data packet departure volume in response to a service volume of the queue and a target utilization factor of the queue.

Applicant reiterates the arguments presented in the response dated December 12, 2003 in connection with these claims and respectfully submits that claims 11 and 27 should be allowable due to their dependence upon

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claims 1 and 19 respectively, which have been argued above to be allowable, and due to the additional subject matter each claims.

The Examiner has maintained the rejection of claims 12, 13, 28 and 29 under 35 USC 103(a) as being unpatentable over Ruutu in view of Kolarov and further in view of Aweya.

Claims 12 and 13 are ultimately dependent upon claim 1 and claims 28 and 29 are ultimately dependent upon claim 19. From the remarks above Ruutu and Kolarov have been shown to fail to disclose or suggest producing a desired volume value in response to:

1)   a receiver volume value specified by the receiver; and
2)   a difference between a) a target departure volume value and b) an estimate of arrival volume of data at a queue....

Claim 12 recites controlling a size of the queue and claim 13 recites that controlling the size of the queue involves producing a scaling factor in response to whether queue occupancy is greater than a threshold value. Claims 28 and 29 recite similar subject matter.
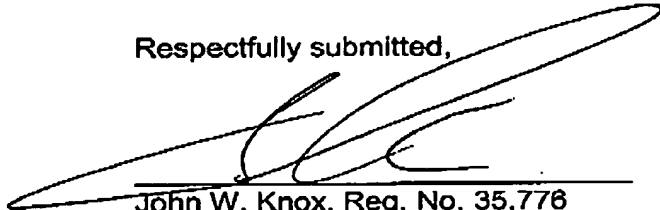
Claims 12 and 13 should be allowable due to their dependence upon claim 1 and due to the additional subject matter they claim. Claims 28 and 29 should be allowable due to their dependence upon claim 1 and due to the additional subject matter they claim.

Applicant wishes to thank the Examiner for the indication that claims 31 and 32 are allowed.

While the subject matter of claims 14 and 30 has been indicated to be allowable, rewriting these claims in independent form should not be necessary in view of the arguments and amendments presented in connection with claims 1 and 19 from which they respectively depend.

Applicant respectfully requests further favorable consideration of the application.

Respectfully submitted,

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